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# China Report

AGRICULTURE

No. 158



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14 August 1981

# CHINA REPORT

## AGRICULTURE

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# I. GENERAL INFORMATION

## READJUSTMENTS TO NORTH CHINA'S FARMING SYSTEM REVIEWED

Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese  
No 5, 23 May 81 pp 27-30

[Article compiled by Grain and Oilseed Production Bureau, Ministry of Agriculture: "Summary of the Status of Reforms to the Farming System in Northern Regions"]

[Text] During the last 2 years quite a few places have actively and steadily readjusted the internal structure of agriculture, and have won initial successes. In order to effect further reforms in the farming system and make rational readjustments in crop patterns, during July and August 1980, the Ministry of Agriculture organized an inspection of reforms to the farming system in northern regions. Participating in the inspection campaign were Henan, Hebei, Shandong, Shanxi, Shaanxi, Gansu, Beijing, and Tianjin. Fuyang and Suxian Prefectures in Anhui and Xuzhou Prefecture in Jiangsu also participated in report-back meetings. Now the inspection and report-back findings have been compiled and summarized as follows:

### Changes and Present Status of the Farming System

The scope of the inspection included the areas south of the Great Wall, north of the Huai He, and east of Longdong and Baoji. This area contains about 440 million mu of cultivated land, about 30 percent of the country's cultivated land; and a population of somewhat more than 260 million people, or 27 percent of the country's population, for an average of 1.7 mu of cultivated land per capita. Most places have large populations relative to the available land, and a fine tradition of intensive farming. The farming system during the period immediately following Liberation may be divided into four major categories. The first was the south central part of Hebei, north and east Henan, and all of Shandong where there prevailed a system of three crops every 2 years, with autumn grain predominant, the land lying fallow in winter, and a small area of two crops every year. The second was the western part of Henan, southern Shanxi, and central Shaanxi, where mostly a system of four crops every 3 years prevailed in which the summer harvested grain crop predominated and fields lay fallow in summer [after the harvest]. Third was eastern Hebei, Tianjin, and part of Beijing where one crop per year predominated and where intercropping of three crops every 2 years was done. Fourth was northern Shaanxi, northern Shanxi and part of the Zhangjiakou area of Hebei, where basically one crop per year was grown.



These various farming systems had all come about gradually as the result of long experience, and they were compatible with local natural conditions and the socioeconomic conditions of the time.

Following Liberation, as production conditions steadily developed and the level of scientific farming gradually increased, great changes also took place in the farming system in these areas. They went through three main stages of two rises and one fall.

The first stage was in the 1950's when mostly there was a change to high yield crops and expansion of the multiple-cropped area. In the case of both the three crops in 2 years winter-fallow areas, and in the four crops in 3 years summer-fallow areas, development was in the direction of rotating two crops, either wheat and corn, or wheat and sweet potatoes. According to statistical data from the six provinces and municipalities of Shanxi, Hebei, Shandong, Henan, Shaanxi, and Beijing, the area of high yield crops like corn and sweet potatoes rose from the somewhat more than 110 million mu of 1952 to the somewhat more than 150 million mu of 1956, and the multiple cropping index rose from 131 percent to 137 percent. The system of three crops every 2 years took a commanding position.

The second stage was the late 1950's and the early 1960's. As a result of the "communist trend," the "proneness to boasting and exaggeration," and the "prone-ness to blind guidance," as well as the effects of severe natural disasters, productivity was greatly damaged and the area planted to wheat and corn, which require large amounts of water and fertilizer, was curtailed, while the growing of tubers continued to increase. The area of two crops each year diminished, and by 1965 the multiple-cropping index fell to 133 percent, a retreat to the level prior to 1956.

The third stage was the early 1970's. Because of improvements in production conditions, the wheat acreage resumed its climb; the summer-sown area increased; and the spring-sown area diminished. The ratio of two crops per year markedly increased, and interplanting developed very rapidly. Flat seeding and multiple planting also increased to bring about a situation of simultaneous development of multiple forms.

During the last 2 years, as a result of summarization of the lessons of experience everywhere, some readjustments have been made in the farming system. The growing of some cotton and oil seed economic crops has been revived and developed, and some of the area ill-suited to wheat growing has been cut back. An increase has taken place in the area of a single crop a year, while the two crops per year area has decreased. Statistics from Henan, Shandong, Shanxi, Shaanxi, Beijing, and Tianjin show that currently the one crop per year area stands at 36 percent; the three crops every 2 years area stands at 28 percent; and the two crops every year area stands at 36 percent. The overall tendency is gradual development toward a more sensible and more perfect direction. It should be affirmed that achievements are the main thing, and the direction is a correct one.

1. Better use of natural resources. This area's frost free period is usually 170 to 220 days,  $> 0^{\circ}\text{C}$  accumulated temperatures are 4500 - 5200 $^{\circ}\text{C}$ ,  $> 10^{\circ}\text{C}$  accumulated temperatures are 4000 - 4700 $^{\circ}\text{C}$ , and annual amount of sunshine is

2,400 to 2,800 hours. Looked at in terms of light and heat resources, an overwhelming portion of the region can institute a summer and autumn two crops per year system. Formerly, largely because of the limitations of the social system and the conditions of production, advantages could not be given full play. Now as improvements have taken place in water, fertilizer, soil, and seeds, commensurate reforms have been made in the farming system. Expansion of the multiple cropping index, and fuller use of this region's copious light and heat resources are the trend in the development of agriculture here.

2. Adaptations to changes in production conditions. According to statistics from Hebei, Shandong, Henan, Shanxi, Shaanxi, Beijing, and Tianjin, the irrigated area in 1965 was 79.31 million mu; in 1970, 132.51 million mu; and in 1978, it amounted to 207.7 million mu, a 1.6 fold expansion in 13 years. In addition, much capital construction for drainage, improvement of the soil, and terracing of fields was done. The amount of chemical fertilizer used per mu of area sown was somewhat more than 15 jin in 1965, 25 jin in 1970, and 55.7 jin in 1978 for a more than twofold increase. Farm tractors increased by more than 18,000 of various types between 1965 and 1978, and the machine cultivated area increased from 21 to 50 percent during the same period. This shows that reform of the farming system depends not solely on subjective desires but on a foundation of rather full material conditions.

3. Furtherance of growth in agricultural production. Since the 1970's, with the exception of cotton, this region's production of grain, oilseed crops, flax, and flue-cured tobacco has increased in varying degrees over the 1960's. Increased grain output, in particular, has been strikingly effective in changing the situation of grain shortage. Statistics show that during the 1960's the state transported a total of 18.9 billion jin of grain into the five provinces of Shanxi, Hebei, Shandong, Henan, and Shaanxi, more than 4.2 billion jin in the maximum year of 1963. In a situation of gradual annual decrease in the grain growing area (100 million mu less in the 1970's than in the 1950's), to alter this situation of grain shortage required mostly reliance on reform to the farming system and increases in per unit yields to bring about great increases in grain output. During the period 1970 to 1978, as a result of reforms to the farming system in these five provinces and Beijing Municipality, the multiple cropping index for grainfields rose from 142.2 percent to 153.9 percent, and realization of grain self-sufficiency or self-sufficiency with surplus in Hebei, Shandong, and Henan played a major role.

#### Problems Occurring in the Course of Reform of the System, and Readjustment Tasks

While affirming achievements by reform of the farming system, this report-back also analyzed existing problems. During the period of rampage of Lin Biao and the "gang of four," in particular, metaphysics ran rampant, idealism prevailed, and reform of the farming system was termed a "revolution in political ideology," and "reform of the new and maintenance of the old, two ideas of progress and regression, and a sharp struggle between two lines." Any differing views, or even some sensible ideas, were termed reflections of the class struggle, or criticized as rightist conservative ideas and obstructions. This caused some places and some units to go against objective laws, and to carry out "blind guidance,"

or "arbitrary uniformity," which affected the healthy developing of farming system reform.

Problems that occurred in the work of reforming the system. Some places excessively expanded the multiple cropping index without regard to local natural conditions or production conditions, only to receive no increases in output or even decreased output. In some places crop patterns were irrational, on top of which were price policies, so full benefit was not derived from the mutual reinforcement of grain crops and economic crops, and summer grain and autumn grain. Within summer grain, once the wheat acreage had been expanded, the wheat, pea, and hyacinth bean acreage was overly reduced. Within autumn grain, once high yield crops such as corn and sweet potatoes had increased, gaoliang, millet and such miscellaneous crops, as well as pulse crops were greatly reduced with the result that some places lacked fuel and fodder, and had only a single variety of grain. This also impaired revival and nurture of soil fertility. Still other places did not decide a rational farming system on the principle of "most superior" to match crop combinations and varieties, but blindly expanded planting of high yield crops and high yield varieties that had a long growth period, exacerbating the conflict between successive seasons and the rotation of crops, which hurt increased output for both seasons. Problems of this sort must be gradually solved in future work. Therefore, the requirements and major tasks, over the short term, in readjusting the farming system are as follows:

1. Appropriate readjustment of the cropping system. As a result of inspection and discussion, everyone's relatively unanimous view is that where water and fertilizer conditions are fairly good, manpower and animal power rather great, and levels of mechanization and per unit yields fairly high, a farming system in which two crops a year predominate should be adhered to. In the matching of crop combinations and varieties, further improvements and perfection should be done for higher output from both crops. Dry plains areas with moderate fertility conditions should basically maintain a system of predominately three crops every 2 years, with the land lying fallow seasonally, but they should also actively create conditions for development of two crops per year. Right now, of major importance is the need to make substantial readjustment of places where heat conditions are a bit marginal and where the conditions of production are not what they should be, such as mountain areas, hills with infertile soils, and low-lying, sandy or alkaline areas that produce two crops each year. Xinxiang Prefecture in Henan Province plans to restore to dryland wheat or a single season in early autumn 300,000 mu of land in its western mountain regions that produces two crops a year but where water resources are inadequate and drought frequently occurs. It plans also to convert about 200,000 mu of sandy, infertile land in the east to one crop of wheat and one of green manure. Anyang Prefecture has 700,000 mu of low-lying fields that produce two crops a year, the wheat yield from which is somewhat more than 100 jin per mu, and the late corn yield from which is somewhat more than 200 jin per mu. It plans to convert part of this area to a single crop of spring corn for yields of between 400 and 500 jin per mu. Such a readjustment, everyone acknowledges to be necessary and workable.



2. Selection of the most superior farming methods and crop combinations. Everyone is aware of the need to proceed on the basis of the concrete, local conditions, following the principle of making the most of advantages, playing up strengths and playing down weaknesses, and pursuing the beneficial while eschewing the harmful, doing whatever brings high output and great earnings, whatever is helpful to the use and nurture of the land, and satisfies the requirements on every side, selecting the most superior several methods of farming, determining what shall be primary and accessory, the two existing side by side, not following only a single track, and not being arbitrarily uniform. At the same time, in the various forms of farming, one should scientifically match crop combinations and varieties. For example, Yantai Prefecture's adoption of a farming method that is mostly "three plantings and three harvests" in "two four plots" handles quite well the relationship between the summer and autumn crops and among the early, mid-season, and late crops. The third crop, in particular, suits the early ripening soybeans, thus both increasing output of grain and improving soil fertility, so that 3.8 million mu of intercropped corn produces yields averaging 700 jin per mu, and the early crop of wheat produces an average of more than 400 jin per mu. This method has become the major farming method welcomed by the masses. As another example, Hanzhong Prefecture in Shaanxi Province appropriately reduced its wheat and green manure area, and expanded its rape area for the promotion of two crops, one of rape and one of hybrid rice. As compared with the former two crop system of wheat and rice or green manure and rice, not only did annual output not diminish, but earnings increased, and the conflict between growing seasons was moderated. Results in nurture of the land were also pretty good. All jurisdictions should conscientiously summarize and promote experiences of this kind.

3. Rational readjustment of crop patterns. In 1979, the area sown to grain in this region amounted to 30 percent of the national total. Cotton amounted to about 50 percent; peanuts and sesame seeds 40 to 50 percent, and flue-cured tobacco 38 percent. This is both a key grain growing area in China and a key economic crop producing area. In 1978, grain crops occupied 84 percent of the sown area, and economic crops 12 percent. For the past several years, the economic crop area for crops such as cotton has been cut back a little more, but readjustments have been made during the most recent 2 years. Henceforth, economic crops are to be revived and developed on the basis of the needs of the state and the people's livelihood so that the peasants' incomes will increase and they will become wealthy with all possible speed. Within the grain crop structure, suitable readjustments also have to be made, such as cutting back on some low yield wheat and restoring some barley, peas, and hyacinth beans; cutting back on some corn and sweet potatoes for which yields have not been high, and increasing somewhat soybeans, millet, and minor grains. Henan Province plans to convert low yield corn fields with yields below 300 jin per mu to soybeans, or to soybeans intercropped with corn. They particularly want to revive and develop soybeans in the Yellow River flood region and in the two hetu [0678 0960] regions of central and southern Henan. By 1985, pulse and green manure crops will be restored to 35 million mu in the province. Of course, how to readjust the farming system in this region in order to still be able both to assure increase in the total output of grain, or at least no decline, while at the same time being able to increase earnings more is a problem requiring diligent study for solution by every jurisdiction.

## Several Problems Requiring Attention in the Course of Readjustment

This inspection permitted a summarization of historical experiences, while at the same time studying problems to be given attention in the course of readjustment.

1. Reform of the farming system has to be done both actively and safely. The farming system has broad ramifications, virtually touching upon all of agriculture and relating to the needs of the state, the collective and individuals. In making readjustments, it is necessary to use a scientific attitude in carrying out intensive study, and careful handling. The existing system of farming generally has its own general conditions and foundations, the advantages and disadvantages of which must be weighed in order to prevent going from one extreme to another, or using methods of arbitrary uniformity to correct arbitrary uniformity. Particularly in the handling of the relationship between summer and fall, the farming system, and multiple cropping system questions, diligent study is required for satisfactory handling. Cutbacks to the crop system are easy, but increasing grain output is difficult. One should be sure not to veer back and forth. First is the problem of the relationship between summer and fall. In this region, use of wheat as the principal summer grain crop is greatly advantageous. Statistics from Shanxi, Hebei, Henan, Shandong, Shaanxi, and Beijing show a 1978 summer grain crop area of more than 210 million mu, and an output totaling more than 57 billion jin. This was 41 percent of the total grain growing area for these places, and 39 percent of their total output. This was also 44 percent of the national summer grain growing area, and 48 percent of total summer grain output. This played a great role in satisfying the needs of the country and in improving the people's livelihood in cities and the countryside. Therefore, as production conditions improve, and summer grain production is actively developed, particularly increases in yields per unit of area, it is extremely necessary to make full use of natural resources and to satisfy the needs of society. The achievements in summer grain production for these years must be accurately evaluated. However, one must also realize that some places blindly expanded the growing of wheat to get two crops per year without considering water and fertilizer conditions, with the result that the increased yield from two crops was less than from a single crop. Some ignored autumn grain production, causing increased output in summer and decreased output in the fall, which was not favorable for increased production for the entire year. All this must be conscientiously studied and gradually readjusted in a planned way. In the present situation in which great increases in per unit yields of summer grain are not possible, any excessive reduction done excessively rapidly may make it difficult to insure steady increases in grain output. If blind readjustments cause a decrease in grain production, this will bring hardships for the livelihood of the masses. Second, on the question of farming methods, most important is how to correctly regard intercropping and flat sowing of two crops. Experience everywhere has shown each of these two methods of farming to have advantages, but neither are sufficiently used. In the north China region, however, intercropping is better able to use the various natural resources of soil, fertilizer, water, air, light, and heat. It is helpful in making use of advantages while avoiding disadvantages, in regulating the farming season, in making the most of strengths while avoiding weaknesses, and in promoting high output from two crops. Generally speaking, by intercropping corn, the sowing season

can be advanced by from half a month to 20 days or more, not only lengthening the usable growing time, but also moderating the hectic conflict between the summer harvest and summer planting in farmwork. Additionally, waterlogging of sprouts can be avoided, and full use made of precipitation during the raining season to promote growth and advance ripening, and to guard against the shrivelled grains in the late crop that are caused by low autumn temperatures, to win a high output. Surveys show a general increase in yields of from 15 to 20 percent as compared with flat sown multiple cropping, and in Yantai Prefecture, the increase in yields was 30 percent. As a result, intercropping has become a dominant form of farming for summer corn in this region. During the past 2 years, in order to adapt to the mechanization of agriculture, some places have advocated changing the intercropping in the north China region to two crops flat sown, one after the other. In fact, some places have already changed millions of mu of intercropped wheat and corn. But owing to the delay in the season, which caused a reduction in corn yields, they had no choice but to change back. Naturally, when seasons permit, flat sown multiple cropping has the merits of saving labor and being suited to mechanization. These are shortcomings existing in intercropping. The future will require further perfection on the principle of a combination of farm mechanization and agronomy. But until there are new methods, in order to increase grain output it will still be necessary to select the optimum intercropping system to adapting general methods to local situations, to consolidate them very quickly, not change them capriciously, and gradually standardize them. Third is the problem of a multiple crop system. In view of China being a country of large population relative to available land, and considering its superior natural conditions, adapting general methods to local situations for the development of a multiple crop system, to increase the multiple cropping index, and improve crop output is a major way to develop China's agriculture. In most places in north China that have developed a system of two crops per year, increased output has resulted. Some places, however, have had problems, principally from making the area for "three sowings and three harvests" a little too large within a period of time. Arrangements were not properly made for the third crop, and this caused a drop in output. In Hebei Province, 14 million mu was multiple cropped during the highest year, and in suburban Beijing between 2 and 3 million mu was multiple cropped. This was more than half the grain growing area. In some places where natural conditions were unsuitable or production conditions were not right, decreased outputs resulted. Quite a few places have made readjustments during the past 2 years. Problems requiring attention are not thinking in terms of absolutes, and general promotion and bludgeoning regardless of conditions, all of which are wrong. In the course of readjustment, through the summarization of the lessons of experience, Beijing affirmed its achievements, and negated the pointless ones for further perfection and increases. They decreased to about 2 million mu the former 3 million mu of "three sowings and three harvests," and readjusted to pulses and green manure the gaoliang and corn formerly grown as a third crop, and which require long growing periods, to institute "three sowings and three harvests." Two interplanted crops, two flat sown crops, and the growing of three crops in 2 years, all existed at the same time. This rather suits the actual circumstances prevailing in the Beijing suburbs, and consequently increased output has resulted.



2. Need to give attention to the study of economic policies. Central government leadership comrades have frequently emphasized that near term development of China's agriculture will depend on policies and science. Readjustments have to be made in crop systems and crop patterns, and both must be relied upon as well. As a result of this inspection and discussion, everyone had a further perception of this problem. For example, the crop patterns for cotton and oil seed crops in Shaanxi was to have been readjusted for many years, but nothing has been done about it. Another example is intercropping soybeans with corn, a traditional Chinese farming method. Because of the ridiculous prices paid, this practice has been in decline for many years. During the last 2 years prices have been raised, and the planted area has also revived. In short, price policies, procurement policies, and the various forms of a system of responsibility for production currently being promoted everywhere can have a direct impact on the building of a rational farming system. They should be examined and studied, and problems in them gradually solved in order to help readjustment work.

3. Intensification of scientific research. For many years research units and agricultural schools have done a great amount of work on reforming the farming system in close combination with production realities. They have conscientiously summarized the experiences of the masses and actively launched scientific research to win quite a few accomplishments, which have been or will play a very good role in production. It was clearly seen in this inspection that as the farming system is reformed and developed, numerous new problems requiring further research appear. Examples include rational zoning of the farming system, standardization of farming, priority methods for crop patterns, breeding of early maturing, disease resistant and high yield varieties, problems in culturing techniques for high yields in different farming systems, and all kinds of farm machines suited for intercropping and flat sown multiple cropping, all of which require research. However, current research work is still very ill suited to these problems, and many problems exist in organizations, personnel and funds for each research, which require appropriate readjustments and strengthening.

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## ORTHODOXY OF NONCOLLECTIVE PRODUCTION PRACTICES QUESTIONED

Beijing NONGYE JINGJI WENTI [PROBLEMS OF AGRICULTURAL ECONOMICS] in Chinese No 5, 23 May 81 pp 60-62

[Article: "Excerpted Remarks From the Seminar of the Beijing Municipal Economic Society on Fixing Output Quotas on a Household Basis"]

[Text] On 21 December 1980, the Beijing Municipal Economics Society convened a seminar on the rural economy where the topic discussed was problems in fixing output quotas on a household basis. Participants in the seminar numbered more than 20 agricultural economic researchers, educators, and those engaged in practical work. Comrades attending the seminar had, for the most part, done penetrating investigation and study of rural villages; therefore, their remarks were closely linked to rural realities. Excerpted remarks are published below.

Zhou Cheng [0719 2052]: Theoreticians and economists are very interested in problems of fixing output quotas on a household basis, and their discussions are just unfolding. Some people suppose that in fixing output quotas on a household basis the relationships among peasant households are not something to be taken lightly; thus, fixing output quotas on a household basis is a new form of collectivization. Some people believe that fixing output quotas on a household basis is an individual enterprise tacked on to the collective economy, and is a special form of a system of responsibility. Some people suppose that practice of fixing output quotas on a household basis means "working on one's own" and that it signifies the failure of socialist reform of agriculture. Some people also feel that one should not regard it as individual economy, but should actively lead in promoting what is beneficial and abolishing what is harmful.

Li Jinghua [2621 7231 5478]: (Political Research Office, Ministry of Agriculture). Anhui Province was earliest with fixing output quotas on a household basis. It is almost 40 percent there. In Guizhou it is 50 percent, and in Gansu 60 percent. Reportedly in 15 percent of the country, institution of fixing output quotas on a household basis is relatively suitable. The spirit of the Central Committee is "three reliances," and areas can fix output quotas on a household basis while other areas do not have to. What is the nature of fixing output quotas on a household basis? Right now there is no unanimity of views. There is a general feeling that practice of four unified is not a system of responsibility and that large scale fixing of work quotas is not a system of responsibility. In fact, there is a great amount of large scale fixing of work quotas on a

household basis, and both commune members and cadres feel this is simple and easy to handle. Moreover, the degree of increase in output is about the same for the two.

Chen Yizi [7115 0001 1864]. We went to Anhui, where we investigated for 3 months. We went to 14 counties in areas of different kinds, and saw various different forms of agricultural production management. The actual way of doing what was generally termed fixing output quotas on a household basis differed very greatly. There was partial fixing of output quotas on a household basis and total fixing of output quotas on a household basis. In the institution of "several unifieds," there was not much controversy; when there was total fixing of output quotas on a household basis and no institution of "several unifieds," the masses termed the practice "fixing work quotas on a household basis" (or "small fixing of work quotas,") which aroused the greatest controversy. However, the peasants most welcome these forms, and other forms are now changing toward these forms. In a small number of places what is termed "fixing output quotas on a household basis" is really working on one's own, and what the masses term "working on one's own," is actually fixing output quotas on a household basis. One view of fixing output quotas on a household basis is like the attitude toward the peasant movement in Hunan at one time when some said it was very good and some said it was very bad. Another view is like the arguments "using the book" at one time, when the book and practice were in conflict. However, a saying and a phenomenon is prevalent of "the peasants want output and the cadres want an orientation."

Right now the question is not whether or not one accepts a certain form, but rather how to give guidance to bring about healthy development.

For many years we have been in the habit of using certain theories to tailor life rather than to use practice to examine theories. The habit of using some form to encompass society and derive a general conclusion overlooks beginning with a large amount of facts to draw a scientific inference. Engels said, "It is not when the natural world and mankind agrees with a principle, but rather only when the principle agrees with the natural world and the circumstances of history that it is correct. ("Natural Dialectics"). This is a fundamental question for us theoreticians to set to rights. Therefore, I believe it is not possible to talk about fixing output quotas on a household basis as matters stand.

Following the Third Plenary Session, the situation in rural villages took a great turn for the better, and establishment of systems of responsibility for production increased output greatly as compared with the time before they were established; increases in production being generally greatest from the fixing of output quotas on a household basis. I have learned three things from this. (1) The broad masses of peasants have a feeling of exhilaration about this second liberation. In many places where formerly numerous methods brought no success, now model fields have been planted. For the backward rural villages in the land, the potential is also in the rural villages! The slow development of our agriculture results not from a large number of people relative to available land, nor from lack of experience, nor even from lack of funds, but from problems with programs and policies. Reports from everywhere in Anhui say that life is not as good as it had been in the period immediately following Liberation. An old comrade

in Chaohu Prefecture said that the livelihood of 50 percent of peasants was not as good as before Liberation, and that for 100 percent it was not as good as for the years 1955 and 1956. Some peasants said they had not had full stomachs for more than 20 years, but they had eaten their fill during these 2 years. So 1,000 points or 10,000 points, whether the peasants have enthusiasm is the first point. (2) The appearance of the "contract system" has far reaching significance for the development of agriculture in China. For the moment, it can use administrative methods to regulate agriculture, gradually changing to use of economic methods; it also places the peasants, the collective, and the country in an equal position for exchange at equal value. In long range terms, it will enable change to a truly new type cooperative economy of voluntary participation and mutual benefit, away from an administrative and economic system organized on the basis of administrative methods and an administrative framework and natural village and blood relationships, which cannot fail to be characterized by natural economy and a feudal patriarchal clan system. (3) The Chinese peasants have found a good form for arousing individuals and developing the aggregate. When we spoke of individual initiative in the past, we were criticized as capitalist, when, in fact, unless there is individual initiative, where will collective initiative come from? The problem is how to find a method whereby the individual and aggregate welfare can be developed in coordination. Comrade Deng Zihui [6772 1311 1863] said, "Fixing output quotas on a household basis is a great creation of the Chinese people," and this is the truth.

I feel that "fixing output quotas on a household basis" has made "three breakthroughs" in the development of China's agriculture. First it broke through Stalin's collectivized model. Formerly, the standard model for the socialist transformation of agriculture was Stalin's collectivization, yet Marx, Engels, and Lenin never spoke of any "collectivization" but only about "cooperation, alliance, and coordination," for which prerequisite conditions are vastly different. The agriculture of Yugoslavia is still another model. We still cannot give a scientific explanation for how the practice of the broad masses of Chinese peasants broke through the Stalin model. Second was the breakthrough in the framework of the administrative and economic system. Following criticism of "lily-footed women," application of administrative methods to transcend agricultural systems established in stages and containing a feudal color began the transition to a truly cooperative economy. The third breakthrough was in the a priori administrative structure of "large in size and collective in nature" to seek an optimum model of the maximum output from the minimum investment in accordance with what is natural in agriculture and development toward pluralization of economic laws.

In the course of my investigations, in virtually every place I encountered the following three theoretical questions about socialism. The first was the stage character of socialism and the question of which stage we are in; the second was the question of conditions for the transfer to public ownership and the process whereby it will be realized; and third was questions about understanding planned economy and putting it into effect. Unless these major questions are resolved, we will be hard put in the future to avoid committing "leftist" errors. We must have courage about our theories and explore that which we do not yet know.



Yu Yingshi [0060 5391 1102] (Rural Village Work Department, Beijing Municipal CCP Committee): Fixing output quotas on a household basis objectively exists, but I fear it will not work. Right now fixing output quotas on a household basis seems like a bastard child. I believe that if it is clarified in theory, will the present stage permit working on one's own? The issue of fixing output quotas on a household basis can thus be readily solved. Still, mechanization levels in the Beijing suburb is high, and if you were to permit the people there to work on their own, they would not want to. That would cut their link to the production teams, and they don't want that. Production organizations are like wearing shoes. Why should everyone have to wear the same size? There has to be adaptation to people and to locales. Hardship households where production conditions are fairly poor desire the fixing of output quotas on the basis of households.

Once output quotas have been fixed on the basis of households, every family will intercrop melons, vegetables, and beans on the piece of land it works. This will solve the problems of having vegetables to eat, which has been so difficult of solution in the past, and it will also solve the problem of eating grain sold back to producers by the state. If output quotas are fixed on the basis of households, this problem will be solved.

Wang Shaoguang [3769 7300 0342] (Rural Finance Department, Ministry of Finance): We conducted an investigation in Hebei Province where the fixing of output quotas on a household basis is very much welcomed by the peasants. One production team has eaten grain sold back to the producers for 19 years. After output quotas were fixed on a household basis, it sold the state 500,000 jin of grain. In some poor villages, no one has built a house for 20 years, but after outputs were fixed on a household basis last year, quite a few families have built houses this year. As a result of the fixing of output quotas on a household basis, the masses truly see some hope. It now seems that poor places welcome the fixing of output quotas on a household bases, but wealthy places do not. Some rich production teams with yields of 1,500 jin per mu water their wheat 11 times in a season and apply 100 jin of chemical fertilizer per mu. Commune members cannot do this, so they do not dare to contract fixed output quotas. They therefore contract for small segments of work instead.

Yang Jinyun [2799 0513 4596] (Investigation and Research Office, Ministry of Agricultural Machinery): Following the fixing of output quotas on a household basis, three new situations appeared in farm machinery operations. First was contracting of machines to individuals. Guizhou Province began this in 1978, and now every province has it. Contracting of machines to individuals also takes many forms such as annually contracting to turn over funds to higher authority, or rental of tractors to permit tractor drivers to work on their own. Second, tractors are sold to individuals. In Guizhou and Fuzhou, instances of this kind are numerous. Some provinces believe that reversion of the means of production to individuals is capitalistic in nature, when actually, following sale of the tractors, they were used more, earnings were greater, and results were good. Third, several people got together to run a tractor station. In Anhui Province, six people ran a tractor station and hired two people. The work attitude was good, and it was better than when run by officials.



Yuan Shichou [5913 1102 3985] (Beijing Municipal Academy of Agricultural Sciences):

1. The question of the nature of ownership is in some disarray. The nature of fixing output quotas on a household basis should be looked at in terms of whether it benefits promotion of the development of production. 2. What is the basis of cadre and commune member initiative in production teams at the present stage? The fundamental question is whether private ownership concepts are legal or illegal. Communists stress public ownership, but in real life, public ownership concepts cannot advance the development of production. 3. Is the socialism of the past several years utopian in nature? (In agriculture, in particular) production has an objective character and a stage character. For the past 30 years, we have meddled excessively in the workers' and peasants' production struggle, and have caused serious losses. 4. Success or failure of agriculture is related to national management organizations. At the present time there are five major ministries giving attention to agriculture, and that is most unfitting. Some of the masses used to say that the Ministry of Agriculture gives blind guidance; the Ministry of State Farms and Land Reclamation is a ministry that loses money; the Ministry of Forestry is a ministry that cuts down trees; and the Ministry of Agricultural Machinery is a ministry of scrap machines. If a water buffalo is better than a tractor, then why insist on mechanization, and use it to adorn the superiority of socialism? Agriculture is a totality. None of the five ministries can control another, and agriculture is dismembered.

Wang Zhengxiao [3769 2973 2400] (Beijing Municipal Price Bureau): A look at the fixing of output quotas on a household basis from the angle of prices. Right now small farm products are becoming scarcer and scarcer, as for example, mother chrysanthemums, and dandelions. The price of medium farm products has skyrocketed, as for wood fungus, and day lilies. Output of field crops increases but earnings do not. Now costs of producing farm products have generally risen and "steaming everything in a large pot" does nothing for lowering costs. Fixing output quotas on a household basis is, in fact, a system of responsibility issue. A large industrial plant can assign responsibility to individual persons, and when agriculture is in the form of a handicraft industry, it must fix output quotas on an individual, a worker, or a household basis. Large military contingents used in warfare would only destroy production; this is an economic law.

Yao Lanfu [1202 5663 6010] (Beijing Farm Mechanization Institute, Ministry of Agricultural Machinery): Fixing of output quotas on a household basis is a penalty paid for the former extreme-leftist line in agriculture, and it exposes a whole series of problems in agriculture. Do the peasants know of the superiority of collectivization? Are not the movies about the golden road [to socialism] very good? I believe that the form of ownership should be of many forms with many forms of an ownership system coexisting. We should use the superiority of collectivism to attract the peasants to take the collectivized road. We should use competitive means and not use repressive means or administrative means to develop production. Otherwise, in the end, the peasants will negate what you do.

Hong Wujin [3163 3527 6855] (Beijing Agricultural University): A uniformly distributed fixing of output quotas on a household basis is a system of responsibility matter, and an issue of the form of operations. On the basis of realities, there can be fixing of output quotas on a team basis, on a worker basis or on a household basis. Large scale fixing of work quotas on a household basis is ancillary to, and supplementary to, the socialist economy; it is not capitalism.

This is because: 1. land cannot be sold; 2. labor cannot be hired and there is no exploitation of others; 3. there is a handing over to the state through requisition purchases, and a handing over to the collective of accumulations; 4. there is self-sufficiency in goods. In a situation in which ownership by all the people, and ownership by the collective are absolutely dominant, that some peasants who have not tasted the sweetness of a collective economy want to institute large scale fixing of work quotas is inevitable.

Wang Songpei [3769 2646 7198] (Economic Institute, Social Sciences Academy): The problem of the nature of fixing output quotas on a household basis has not been solved. The divergence is whether it is a system of responsibility or dividing up the fields for work on one's own? This is a struggle between "true name" and "beautification." Can large scale fixing of work quotas slip into working on one's own? I believe it can. There is an inevitability in the appearance of the fixing of output quotas on a household basis, and there is an inevitability in sliding into working on one's own. For example, a bad job of the collective economy and a loss of confidence in cadres on the part of the masses are reasons precipitating the large fixing of work output quotas. Similarly, they are reasons for sliding into working alone. Is the fixing of output quotas on a household basis an expedient measure or is it to exist for a long time? If one supposes that it is the same as working on one's own, of course, it can only be an expedient measure. But if one recognizes that it is a system of responsibility, he will naturally come to the conclusion that it will exist for a long time.

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CSO: 4007/485

## BRIEFS

**INCREASED FARM LOANS**--This year the Fujian Provincial Bank of Agriculture has increased farm loans to rural communes and brigades, and to commune members in support of agricultural production and diversification. At the beginning of the lunar year, the Fujian Bank of Agriculture organized more than 5,100 banking and credit cooperative cadres from around the province to go down to rural communes and brigades throughout the province to help communes and brigades implement systems of responsibility for agricultural production, to set up economic contract systems, to formulate production plans, to widen avenues for sideline industries, to help them assemble capital and arrange for use of capital, granting timely loans to support spring farming and commodity production. By May, more than 322 million yuan had been issued throughout the province as farm loans of one kind or another, a 22.9 percent increase over the same period last year. Accompanying institution of systems of responsibility for production has been tremendous increases in loans by individual commune members. By May, more than 43 million yuan had been loaned them, 5.14 times the amount for the same period last year. During the first five months of this year, agricultural savings in the province had increased by more than 143 million over the same period last year for a 25.2 percent increase and an all-time high. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 24 Jun 81 p 6] 9432

CSO: 407/503

HOUSING BOOM IN COUNTRYSIDE CONTINUING

Guangzhou NANFANG RIBAO in Chinese 22 Jun 81 p 1

[Article: "Housing Boom in Guangdong Countryside"]

[Text] Since the Third Plenum, people coming back from the countryside have always talked excitedly about the many new buildings in the rural areas. A recent survey of 580 peasant households in 59 communes in 20 counties conducted by the provincial statistical bureau indicates that on average one of every three households constructed a new home last year.

Housing construction and market town construction have developed at an unprecedented rate over the last 2 years. At a provincial housing construction conference held in Fanyu County in April of this year, it was preliminarily estimated that nearly 1 million peasant households have constructed housing with floor space reaching approximately 40 million square meters, excluding buildings for agricultural, industrial and sideline production purposes. In the Dashantian area of Zhongshan County, the peasants who used to live in thatched cottages for generations, have constructed housing with more than 600,000 square meters of floor space over the past 2 years, topping the total for the previous 10 years. At present more than 14,000 commune families have moved into their new brick-and-tile homes. By the end of last year, 596 of the fishing families or more than 60 percent of total boat people in Shanshui County fishing communes have settled down on the banks. Compatriots of Li and Miao nationalities inhabiting Leluo Commune in Ledong County have gradually changed their life of cave dwellers since their liberation and are moving into their new brick-and-tile homes. They constructed nearly 100 new homes with an area of 10,000 square meters on seven hillsides. According to statistics of experimental counties, 12 percent of the peasant households constructed new housing last year in the counties of Fanyu, Chaoan, Ledong, Dongguan, Qionghai, Meixian, Gaoyao, Shunde and Lechang.

To meet the new upsurge of housing construction, a number of prefectures and counties have set up special organizations to help commune members technically and in the matter of material resources and design to construct beautiful, dignified, space-saving, and low-cost homes. Many localities have adopted measures such as private construction and public aid, mutual aid between commune members, unified construction, and unified planning to speed up housing construction. Indiscriminate use of farmland for housing as witnessed in some localities is now being rectified in accordance with the urgent State Council circular.

9780

CSO: 4007/489



# FARMLAND BEING USED FOR HOUSING

Guangzhou NANFANG RIBAO in Chinese 20 Jun 81 p 1

[Article by NANFANG RIBAO commentator: "Prompt Solution to the Problem of Farmland Being Used for Housing Urged"]

[Text] With the rural economic situation taking a turn for the better in recent years, housing construction in the countryside is thriving as never before since the founding of the republic. It is the inexorable trend of economic growth and gradual prosperity of peasants in the rural areas and is a good thing. But, indiscriminate use of farmland for housing construction and developing commune-brigade enterprises is so serious that we should attach great importance to the problem. Upon discovery of this problem, Xuwen County has taken timely measures to put a stop to the indiscriminate use of collective farmland and has achieved good results. Other localities can use their methods as a frame of reference.

Farmland is very valuable in our province with less land in relation to population--a little more than 0.8 mu of land per capita. Along with the population growth, the contradiction between land and population is bound to become increasingly acute. Failure to bring the use of farmland under control will not only affect the present development of agricultural production and improvement of people's livelihood but also bring disastrous consequences which will not be remedied for years to come and which will trouble future generations. Under no circumstances may we treat lightly this vital problem which affects the overall situation and the long-term interests of the people.

With a view to rectifying the present indiscriminate use of farmland that has appeared in a number of localities, we should penetratingly publicize the urgent circular of the State Council and teach the rural cadres and commune members to correctly handle the relationships between the individual and the collective and between the immediate and long-term interests, take account of the overall situation, uphold the collective interests and solve this problem fully. At the same time, we should make it perfectly clear to the masses that when constructing collective or individual housing, whether in the rural areas or in cities and towns, they must implement the provisions laid down in the circular of the State Council concerning the use of farmland for housing, and

subordinate themselves to the unified planning of housing construction in their localities. Communes and brigades that establish enterprises and commune members who construct housing should utilize where possible hillsides, wasteland, old house sites, and vacant village land, and promote building of multi-story structures. The use of farmland for housing must be examined and endorsed by production team or brigade and approved by the commune management committee. Residents in cities and towns wishing to construct housing must follow the procedures for application and approval and must not buy or use land on their own without authorization for housing construction purposes. Those state organs, organizations, enterprises and units, military units, and collective enterprises set up by cities and towns, that have real need of collective land in the rural areas must go through the land requisition procedures according to the provisions and reduce the area of land requisitioned as far as possible.

After instituting the systems of job responsibility like contracting production to households and contracting work to households in various localities, it frequently happens that peasants have constructed housing on their contracted farmland. This practice is not allowed. All localities should reaffirm to commune members that the land of rural communes and brigades belongs to the collective, that commune members have only the right to use the housing sites, private plots, private hills and contracted farmland allocated to them, and that they are not allowed to rent to others, buy, sell, or transfer without authorization these types of land, nor are they allowed to construct housing, dig graves, open mines, make bricks and tiles on the contracted land and private plots. It is wrong for some people to regard the contract land as their private property and use it at will. This practice should be resolutely rectified and sternly dealt with according to the circumstances of each case. In the case of farmland, particularly paddy field already used for housing construction without having been planned and approved by brigades and production teams, where housing construction has started but is not completed, those concerned should be educated and ordered to move construction to the housing sites planned by production teams under unified plans; where housing construction is completed and cannot be moved elsewhere, collective losses must be made up in addition to assuming the task of public grain purchase. From now on, those who recklessly use farmland for housing, rent farmland to others, buy or sell farmland and transfer collectively distributed land without authorization should be subjected to administrative disciplinary measures and economic punishment (suspension of construction, dismantling, compensation for losses, return of land, confiscation of unlawful income, and payment of fines) according to the circumstances of each case, irrespective of whether they are state cadres or commune-brigade cadres or the masses. In serious cases where the offenders took the lead and incited use of farmland for housing and refuse to mend their ways, they will be prosecuted according to the law. All localities should take special care to teach their basic-level cadres and state cadres living in the rural areas to take the lead in implementing the urgent circular of the State Council and act in an exemplary way to educate the masses. This line of action will certainly produce very good results.

We are convinced that, provided the leading bodies attach great importance to the problem and take effective measures, indiscriminate use of farmland for housing can be quickly curbed.

## SILKWORM COCOON HARVEST INCREASES

Guangzhou NANFANG RIBAO in Chinese 18 Jun 81 p 1

[Article: "Situation Is Favorable to Silkworm Cocoon Production in Guangdong"]

[Text] The situation is very favorable to silkworm cocoon production in our province this year: more than 135,700 dan of silkworm cocoons were produced in the first and second crops, a 24-percent increase over the same period last year. The increase was 4.3 percent for the first crop and 41 percent for the second crop, reaching record levels since the founding of the republic.

The first and second crops of silkworm cocoon production in our province this year were characterized by: 1) More new mulberry fields were put into production. Twenty-five thousand mu of mulberry trees were planted in our province last year, and their leaves were picked in spring this year to feed silkworms. 2) Unprecedented growth in silkworm cocoon production. Calculated on the basis of the two crops, all prefectures and counties with sericulture industry have increased production. Among the prefectures and counties with a more than three-fold increase in production in the first crop were Shaoguan Prefecture, Lianjiang and Yangchun counties; those which more than doubled production include Zhanjiang Prefecture, Taishan and Dongguan counties; production increased more than 40 percent in the silkworm cocoon producing centers of Nanhai, Zhongshan, Xinhui and Huazhou counties. Total output of silkworm cocoons in the first and second crops has increased more than 10 percent in Shunde County which accounts for nearly half of the total provincial output.

Why was the situation particularly favorable to the first and second crops of silkworm cocoon production this year? Apart from ideal weather and ample rainfall, the decisive factor was the power of policy. In March last year, the provincial people's government adopted an encouragement policy with regard to silkworm cocoon production. This policy stimulated the production enthusiasm of peasants, particularly in the new silkworm cocoon areas. The new silkworm cocoon areas made rational adjustment of production arrangements while grasping grain production. More than 40,000 mu of mulberry trees were planted in the winter and spring. In six old silkworm cocoon-producing counties including Shunde, economic crops are concentrated and income from sericulture industry

is relatively low. In light of these circumstances, beginning this year the provincial people's government lowered the silkworm cocoon production base for these six counties, thus enabling the communes and brigades there to gain more material benefits from silkworm cocoon production. This plus the economic measures taken by a number of communes and brigades to stabilize and promote production have protected the enthusiasm of the masses. In addition, various systems of job responsibility have been introduced in light of local conditions. It is another reason for growth in silkworm cocoon production. In Lianjiang County, some specialized teams or specialized households fulfilled their annual production targets in the first and second crops.

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## STATUS REPORT ON ECONOMIC CROPS, AFFORESTATION, FAMILY SIDELINES PRESENTED

Hong Kong ZHONGGUO XINWEN in Chinese 24 Jun 81 p 3

[Article by Zhongguo Xinwenshe Correspondent Zhong Chengxiang [6945 1794 4382]: "Thriving Development This Year in Guangdong's Agriculture, Forestry, Animal Husbandry, Sideline and Fishery Industries"]

[Test] This year Guangdong Province has launched active diversification for vigorous development of its agriculture, forestry, animal husbandry, sideline and fishery industries.

The province's bumper harvest in agriculture last year improved the grain supply situation, so that every jurisdiction in the province has been able to devote more manpower and material for diversification of the cultivated land. Development of economic crops this year has been conspicuous everywhere in the province. Sugarcane has been planted on 3.25 million mu, 680,000 mu more than last year. The major peanut production areas of Shantou, Zhanjiang, Huiyang, and Guangzhou have expanded peanut acreage by a total of more than 300,000 mu. The area devoted to the growing of jute, amber hemp, and tobacco has also been enlarged this year.

Accompanying the further implementation of rural economic policies and the general institution of various forms of a system of responsibility for production has been arousal of peasant initiative in production. As a result, various economic crops have been planted on time and intensively cared for; growth has been very good. Fine Guangdong citrus fruits and lichees have also seen development. In the Guangzhou and Foshan area, lichees are now going to market, and a bumper harvest of watermelons has been happily harvested to fill markets throughout the province. Prices have fallen since last year.

This spring Guangdong afforested more than 2.7 million mu, already overfulfilling afforestation plans for the entire year. Aquatic and oceanic hatching industries have also developed, newly opened fish ponds throughout the province this year covering more than 20,000 mu. Quite a few cities, towns and rural villages have started raising of aquatic products by families, using either low-lying land or building ponds in front of and behind houses to raise fish. Statistics from 10 counties and municipalities including Zhongshan, Panyu, Xingning, and Yangchun show more than 100,000 households going in for family raising of aquatic products. Guangdong had a decline this year in the number of hogs on hand, but great development has occurred in domestic fowl. Everywhere large quantities of chickens, ducks, and geese have gone to market to enliven both buying and selling.

Family sideline industries such as drawnwork and bamboo plaiting, and commune and brigade enterprise production has become daily more flourishing. The craze to build new houses that has arisen in cities and the countryside has made for particularly rapid growth of commune and brigade enterprises dealing in building materials such as bricks, tiles, and stone, and commune and brigade enterprises accepting materials from abroad for processing have also become more and more numerous.

9432

CSO: 4007/503

BRIEFS

GUIZHOU BUMPER RAPESEED HARVEST--Guizhou reaped a bumper rapeseed harvest for the fourth successive year. The gross output of rapeseed in Guizhou amounts to 477.06 million jin, an increase of 87.3 percent compared with the output in 1980. A new record has again been set. The bumper harvest of rapeseed has played an active role in enlivening the rural economy, improving edible oil supply to rural and urban areas and promoting the four modernizations. After reaping the bumper rapeseed harvest, the peasants actively sold rapeseed to the state. Some 320.22 million jin of rapeseed had been procured throughout the province by 20 June, overfulfilling the procurement plan by 23 percent. [HK180944 Guiyang Guizhou Provincial Service in Mandarin 2315 GMT 3 Jul 81]

CSO: 4007/533

## HUBEI

### BRIEFS

PEASANT ASSOCIATION--The Hubei Provincial CCP Committee issued a circular on 24 June announcing that the first congress of the provincial peasant association will be held in December this year. According to the circular, the main items on the agenda of the congress will be examining the report on the preparatory work for the provincial peasant association and on its work in the future, discussing the draft provisional constitution of the provincial peasant association and electing the first committee of the provincial peasant association. About 1,000 delegates will attend the congress. The circular urges that good work be done in preparation for this congress, including the selection of delegates to attend the congress. [OW290149 Wuhan Hubei Provincial Service in Mandarin 1100 GMT 26 Jun 81]

CSO: 4007/533



## WAYS OF INCREASING SOIL PRODUCTIVITY DISCUSSED

Luda LIAONING NONGYE KEXUE [LIAONING AGRICULTURAL SCIENCES] in Chinese No 3,  
15 Jun 81 pp 39-42

[Article by Lu Xinlai [7120 2946 0171], Shenyang Agricultural Academy, Zhang Rende [1728 1804 1795], Liaoning Provincial Bureau of Agriculture, and Xiao Zuyin [5135 4371 7113], Shenyang Agricultural Academy: "A Look at 30 Years of Development of the Farming System in Liaoning Province In Terms of a Combination of Soil Use and Soil Nurture"]

[Text] The farming system means the crop system, which is the system of farming techniques that mankind uses under certain social, natural, and economic conditions. Any rational system of farming must proceed from needs and capabilities, handling well the relationships among the weather (climate), the land (soil), and plants (crops), making rational use of the soil and satisfactorily handling the soil to expand biological pulmonary circulation, and decrease geological systemic circulation to create an economic balance in the fields, and a renewal of soil fertility, thereby achieving a close linkage between use and nurture of the land. The building of rational farming systems everywhere on the basis of the zoning of agricultural regions and the adaptation of general methods to local situations is a fundamental ingredient in realization of the four modernizations.

The farming system is composed of a series of agricultural techniques for using and nurturing the land, and may be generally divided into the planting system and the soil management system. The planting system includes crop distribution, rotational cropping, crop patterns and planting forms, reflecting timing and arrangements for the planting of crops. The soil management system includes cultivation of the soil, fertilization, irrigation, and such supporting measures reflecting organic, nutrient, and moisture replenishment levels in farming the soil, as well as the regulation and control of elements such as water, fertilizer, air, and heat. When the two are well combined, the crop's requirements can be satisfied and high yields are promoted. It is also possible to take good care of and restore soil fertility to assure consistent yields. Since ancient times, mankind has used different methods of using and nurturing the soil so that the farming system would be repeatedly replenished and developed, thereby forming systems for taking land out of production, systems of allowing land to lie fallow, rotational cropping systems, and intensive farming systems.

(1) At the present time, the farming system in Liaoning Province is basically one of rotational cropping. It consists mostly of the rotational cropping of grain (grass family crops) and beans (pulse family crops), and grain and green manure, supplemented by fertilization and soil cultivation for a combination of use and nurture. Some places where there are large numbers of people relative to available land and where intensive farming is conducted are in a process of transition to a system of intensive farming. Land use is tending toward intensification (such as two crops per year or intercropping and multiple cropping). Soil management is also moving toward intensification (such as increased fertilization, irrigation, intensive farming, and garden-style cultivation of farmland). However, in overall terms, the farming system of Liaoning Province remains unfixed and is still in process of change.

A review of changes in the farming system of Liaoning Province during the past 30 years develops along the following lines.

The farming system: Wetlands and paddy field area has increased from 970,000 mu in the period right after Liberation to 5.78 million mu. The corn growing area, with its quite high production potential, has expanded from 10.26 million mu of the period immediately following Liberation to 20.83 million mu. The two crops per year area of wheat-sunflower, wheat-beans, rape-sunflowers, potatoes-corn now amounts to 1 million mu. Changes have also taken place in the form of farming, with an increase in intercropping and a virtual eradication of mixed planting. Approximately 300,000 mu of wheat and corn are intercropped, and the multiple cropping index has increased from 102.2 to 105.8 percent.

The soil cultivation system. Tractors now number 85,726 of various sizes, medium and large models numbering 39,993. Each tractor is responsible for cultivating an average 1,490.5 mu. Cultivation using animal power is gradually giving way to mechanized cultivation. During the period immediately following Liberation, plowing was done to a depth of only 12 to 14 centimeters, but now it has increased to a general 16 to 20 centimeters. The area sown by machines is more than 11 million mu (of which careful sowing of small amounts of seed is done on 2.44 million mu). Growing of plants on raised ridges has been promoted on 3.52 million mu, and banking of soil around plants following flat sowing has been promoted on 4.44 million mu. On 2.88 million mu there is cultivation for deep loosening between plants. Farm machines and farming techniques have been combined more closely to make a very good start.

The fertilization system: Development has taken place from fertilization solely with barnyard manure to its use in combination with chemical fertilizer. Barnyard manure applications have increased from 2,000 to 3,000 jin per mu to between 4,000 and 5,000 jin per mu. Use of chemical fertilizer averages 85.6 jin per mu. Some communes and brigades have switched from row application of barnyard manure to spreading it and have changed from topdressings of chemical fertilizer during the growth to fertilizing deeply before sowing is done, and giving attention to sensible augmentation with nitrogenous, phosphate, and potash fertilizer.

Along with reforms in the farming system during the past 30 years has been construction of water conservancy projects for farmlands, use of high yield varieties, and sensibly close planting, which have increased Liaoning's total output of grain and beans from the 10.26 billion jin of 1950 to the 23.88 billion jin of 1979.

In the course of changes in the farming system, Liaoning Province has also exposed numerous problems. Most conspicuous of these problems is the shortage of fertilizer and water, which frequently becomes a limiting factor in increasing output. Dalian Prefecture has substantially suitable light and heat conditions for growing two crops a year, yet the two crop area fluctuates around 300,000 to 500,000 mu, the key reason being fertilizer and water, and insufficient soil fertility. Grain production in Liaoning Province during the past 30 year has formed an inconsistent wave shape. In a large context, the single crop structure of agriculture has destroyed the ecological balance within agriculture. In a small content, a problem exists in emphasis on use and slighting of nurture of the land, caring only for the present and ignoring the long range, with no serious attention being given to capital construction of farmlands and the day-to-day ecological balance of the fields. As a result, low temperatures, droughts and floods, winds and hailstones can neither be controlled in the sky above nor brought under control on the earth beneath, so serious calamities strike regularly.

(2) A combination of use and nurture is widely understood to mean use of resources and protection of resources, the nub of which is use of the land to nurture the land and maintenance of the ecological balance of the fields. The land is a resource and is, at the same time, a production base. The continuance of agricultural production requires that the soil have a special significance greater than that of other resources. In the total production process, the crops themselves and farming methods have different and enduring effects on soil productivity. These effects exhibit the unity of opposites in use and nurture of soil productivity. Used much and nurtured little, soil fertility will degenerate. Only when use and nurture are combined, and nurture maintained more than use, can soil fertility begin to be renewed, and a foundation exist for continuous expansion of further production.

What is the situation in soil use in Liaoning Province? What are the principal problems that exist? A general analysis is made using the following aspects.

1. Crop patterns are a strategic measure that prove decisive in the ecological balance of the fields. They both require a basis in the needs of the state, the collective and individual commune members and also require consideration of the capabilities of local conditions. It is also necessary to combine both the present and the long range, to study what burden the soil is capable of carrying, and methods of increasing fertility. Only in this way can the pattern be relatively stable and bring high and consistent yields. Pertinent data show that for a yield of 1,000 jin per mu of corn from a single crop, about 25.7 to 33.0 jin of nitrogenous fertilizer is required. Corn sheds few leaves and when the stubble is removed from the fields, nitrogen remaining in the roots amounts to only about 1 jin. A 300 jin per mu yield of sunflower seeds requires 55.8 jin of potash, and potash remaining in the soil on plant roots is less than 10 jin. From a 250 jin per mu crop of soybeans, because of the function of root node bacteria and inasmuch as an overwhelming majority of the leaves and roots of the beans are returned to the soil, the farmland's receipt and expenditure of nitrogen is about in balance. However, affective phosphate is used up at the rate of 4 jin per mu or more. At the present time, the corn area throughout the province has reached saturation, and individual production teams in northwest Liaoning have expanded the growing of sunflowers to an inappropriate degree. This will not only create an irrational situation between what the soil receives and what it gives, but provides diseases and insect pests opportunity to spread, posing an extremely great hazard.



Consequently, appropriate readjustment of crop patterns is fully necessary. An example is Daliutun Commune in Xinmin County where soil is poor windblown sand and salinity-alkalinity rather severe, and where grain yields are only somewhat more than 300 jin per mu. Prior to 1978 when requisition grain purchase quotas were 4.8 million jin, the commune had no choice but to plant more grain crops. In 1979, suitable policy and crop pattern readjustments were made, and in that year in addition to requisition procurement quotas of 2 million jin, the commune was able to tender to the state 800,000 jin of sunflower seeds, 1.13 million jin of soybeans, 140,000 jin of sesame seeds, 460,000 jin of castor beans, and 2 million jin of garlic. Average per capita income rose from 54 yuan in 1978 to 89 yuan. As another example, Shaheyingsi Commune in Jinxi County has 50,000 mu of cultivated land, and for several years emphasized planting of "two miscellaneous grains" [other than wheat and rice]. The commune farmed these two crops alone with no change. Following readjustments during the past 3 years, 11 mountain area production teams in the north with infertile soil expanded the growing of soybeans and peanuts. Despite a 7,000 mu reduction in the grain growing area between 1976 and 1979, total output rose 18 percent, while at the same time 900,000 jin of soybeans and 2 million jin of peanuts were harvested. In 1977 per capita income averaged 56 yuan; in 1979, it rose to 102 yuan.

2. Rotational cropping can balance use of the soils nutrients and moisture, while repeated growing of the same crop leads to a lopsided expenditure of field nutrients and moisture. Use of green manure and pasture grass in rotational cropping plays a conspicuous role in nurturing the soil. The peasants in Liaoning Province used to be in the habit of rotating crops. In recent years, however, as a result of expansion of the corn acreage and more intercropping of corn with soybeans, crop rotation has been thrown into disarray, making rotation difficult. As a result, diseases, insect pests, and weeds abound; the fertility of most plots has decreased; fertility is uneven; and crops do not grow uniformly. The Daxin No 2 Brigade in Xinchengzi District of Shenyang City has 5,200 mu of cultivated land where, prior to 1977, corn and soybeans were intercropped and total grain output ran from 2.32 to 2.84 million jin while soybean output totaled only 160,000 to 180,000 jin. After 1978, when each of the two crops was grown alone and rotationally cropped, the 1979 grain output totaled 2.77 million jin, and soybeans totaled 530,000 jin, clearly demonstrating the superiority of rotational cropping of individual crops. In the arid western parts of Liaoning Province, people are few relative to the available land; the soil is exceedingly infertile; and its organic content is frequently as low as about 0.5 percent. Rotational cropping of sweet clover and oil seed and grain crops has been shown an effective method of combining use and nurture of the land. Xiabeigou Production Team, Xiaotang Commune, Jianping County began to grow grass in 1965 at a rate of 1,000 mu per year. The grain to grass ratio was 1:1.25. In 1979, 800 mu produced a total of 300,000 jin of beans and grain, yields increased from the 45 jin per mu before grass was grown to 375 jin. At the same time the animal husbandry industry rapidly developed. Now each person averages 1 hog and 1.3 sheep, and each household averages 1 large livestock animal. The organic content of the soil increased from the previous 0.5 percent to 1.37 percent.

Fertilization is a measure for directly augmenting the organic content and nutrients in the soil to assure balanced nutrients in farmland. In 1963, Liaoning Province used a total of 176.62 million jin of chemical fertilizer, or 28 jin per mu. By 1979, this has risen to 4,864,200,000 jin, or 85.6 jin per mu. During the past 30 years, two rather conspicuous problems have existed in the application of fertilizer in Liaoning Province. One has been no matching of the proportions of organic and



inorganic fertilizer applications, and the other has been no coordination of the amounts of nitrogenous and phosphate fertilizer used. In the case of Haicheng County, for example, between 1966 and 1968, organic fertilizer that would convert to 7,881,000 jin of nitrogen was annually applied, and inorganic fertilizer that would convert to 3,006,000 jin of nitrogen was used in a ratio of 1:0.38. Between 1977 and 1979, however, the ratio between the two was 1:2.56. In a period of 14 years, inorganic fertilizer increased by more than 10 times while organic fertilizer increased only by 64.8 percent. Between 1966 and 1968 all forms of fertilizer used converted to 10,887,000 jin, which converts to 4,358,000 jin of  $P_2O_5$ , the ratio between the two being 1:0.44, which is rather suitable. Between 1977 and 1979, this increased to 46,204,000 jin and 9,423,000 jin respectively, the ratio being only 1:0.20. Clearly an imbalance existed in the ratio between nitrogen and phosphate, and the soil in the fields seriously lacked phosphate.

4. Though cultivation of the soil does not directly increase nutrients and moisture, it performs a unique role in regulating the nutrients and moisture in the fields. As a result of cultivation of the soil, large amounts of manure and stubble are plowed under and mixed into the cultivated layer. This creates a deep, friable, and suitable cultivated layer, and regulates the activity of micro-organisms and the decomposition and transformation of organic materials so that nutrients are supplied crops in a steady stream. At the same time, in view of the spring drought and summer flooding in Liaoning Province, through flexible use of the several main links of spring harrowing and rolling, deep loosening in the summer, and cultivation in fall, spring moisture is maintained for a period of time, and spring drought is taken in hand to maintain balanced moisture in the fields. At the present time, in fields where the organic content is abundant, the tendency is toward a combination of turning, loosening the soil deeply around banked corn produced increased outputs of 4.1 and 7.4 percent respectively as compared with unloosened soil. Experiments conducted on brown soil on slopes by the Shenyang Agricultural Academy during the two year period 1979 and 1980 show deep cultivation to loosen the soil around banked corn produced yields of 7.9 and 2.9 percent more respectively than for harrowed soil that was not loosened. On fertile flatlands of rather high organic content, a change from year after year plowing to plowing one year, and only harrowing and then loosening the soil through cultivation another year not only can increase output and save expenditure of fuel for machines, but also reduces destruction of soil structure, and regulates effectiveness of the speed of mineralization of organic matter in the soil.

(3) In view of the situation in Liaoning Province, the key to realization of a combination of use and nurture and maintenance of the ecological balance of the fields lies in increasing the amount of organic matter in the soil.

Organic content of soil is a major indicator of soil fertility. This is not only because organic nutrients are complete and fertility long lasting, but more importantly because when organic matter enters the soil it promotes multiplication of micro-organisms and formation of soil structure, thereby improving the soil's physical, chemical, and biological properties. Fertilization with inorganic fertilizer alone, with each element properly matched, may temporarily increase yields. However, over a long period of time, use of chemical fertilizer alone may bring about a loss of the humus that the soil originally contained so that the physical and chemical properties of the soil tend to deteriorate.

In the course of change of the farming system over the past 30 years, because of the frequent attention to the present, a long range view has been lacking. While looking at the top of the ground, study of elements under the ground have been ignored. Specifically, we have not come to grips with this key matter of a combination of use and nurture. As a result the organic content of the soil in most areas has declined and fertility has dropped. Tests conducted during 1975 and 1976 at Gengzhuang Commune in Haicheng County showed an 0.82-1.67 percent organic content of cultivated soil in the commune for an average of 1.39 percent. A recheck done in 1979 and 1980 showed it to be 0.72-1.86 percent, or an average of only 1.25 percent. It had dropped 0.14 percent in 4 years for an annual average drop of 0.035 percent. Another survey done in 1978 on six communes in Tieling Prefecture showed the cultivated land having less than 1 percent of organic matter to be 44 percent of the total cultivated land; between 1 and 2 percent to be 39.1 percent; and more than 2 percent to be 16.9 percent. In Dalian Prefecture, the organic content of the soil is even more lacking, generally only 0.5-1 percent. Soils in the northwestern part of Liaoning are most depleted, organic matter being only between 0.2 and 0.5 percent. Because of the reduced organic matter in the soil, the soil is seriously phosphate deficient. The Sujiatun District of Shenyang City and Haicheng County are areas in Liaoning Province where soil fertility is quite good; nevertheless, results of a soil survey show phosphate content to be very low. In Sujiatun District, soils with an effective phosphate content below 4 ppm amount to 54.1 percent of the total cultivated land, and a phosphate content of from 5-8 ppm amount to 29.54 percent. (8 ppm and above is only 14.95 percent of the total). In Haicheng County, 24.1 percent of the land is less than 15 ppm; 26.1 percent is 10-15 ppm; and 39.20 percent and 55.78 percent respectively is 5-10 ppm and greater than 5 ppm.

1. In view of the organic matter and nutrient situation in the farmlands of the province, we believe that if earnest attention is given the following, both use and nurture of the land can be achieved, fertility can be increased, and consistently high yields can be realized.

1. Strengthening of the technical training of grassroots level cadres, instituting a general one time training course for them in agricultural science and technology in which the comprehensiveness, continuity, and regionality of agricultural production is set forth. Make the cadre ranks fairly stable and perfect policies.

2. Use of various forms of large scale plantings of green manure and pasture grasses, and development of the livestock raising industry to bring into being and to increase sources of organic fertilizer. Readjust policies on the accumulation of manure; encourage more accumulation of manure; and accumulate manure well.

3. Make suitable readjustments in crop patterns. All jurisdictions should suitably curtail their corn growing areas, and adapt general methods to local situations to increase the wheat, broom corn millet, gaoliang, sweet potatoes, peanuts, sunflowers, and other pulse crops area. They should also determine the proportional amount of each crop to be grown, and institute rotational cropping.

4. Use every means possible to increase phosphate fertilization, giving attention to the proportion of nitrogen to phosphate. The province and municipalities should build large phosphate fertilizer plants, and mine or bring into the province from elsewhere the raw materials for phosphate fertilizer. This should be done in a directed and planned way.

5. Afforestation to protect the soil from erosion and to improve the climate and geographical environment. In addition to afforestation of mountains and hills, and ravines, forest shelter belts should also be built in plains areas to change the microclimate of farmlands.

6. Major efforts in methane gas to solve the rural energy problem and to conserve plant stalks and stems for use as fodder or for direct return to the fields.

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## BRIEFS

**TROPICAL PLANT RESEARCH ACHIEVEMENTS**--After 20 years of arduous efforts during which time 1,500 different kinds of tropical plants were introduced from abroad, the Yunnan Tropical Plant Institute has scored more than 100 research successes, quite a number of which are successes achieved for the first time in China. In order to produce results in the shortest possible time, the Yunnan Tropical Plant Institute began scientific research work even before building was complete. In 1963, this institute introduced from Africa a group of butter trees [*butyospermum Parkii*]. Seeds from this tree will not sprout except in high temperature conditions. At that time, there were no adjustable temperature greenhouses available, so scientists used buckwheat husks to stimulate sprouting, getting a sprouting rate of better than 90 percent. Butter trees from remote Africa settled down in China for the first time. In 1976, in order to check resources of the cancer-fighting plant, Meidengmu [5019 4098 2606], researchers from this institute and other survey personnel from Yunnan Province traveled throughout southern Yunnan in 23 counties, finally discovering large sources of Meidengmu. Now this institute has developed into a scientific plant research base that boasts six special laboratories, an intermediate experimental plant, a 1,800 mu experimental farm and non-staple food production base, and more than 20,000 square meters of buildings for work and living. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 24 Jun 81 p 6] 9432

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TAIWAN

BRIEFS

RICE GRANARIES--Taipei, 20 Jul (CNA)--The government is planning to invest NT dollar 756 million (U.S. dollars 21 million) for building granaries capable of storing 108,000 metric tons of rice in the next 4 years. A government survey indicated that the combined capacity of rice granaries owned both by the government and private investors totaled 1.32 million tons, showing a shortage of 108,000 tons. According to a preliminary plan, the 4-year construction program will be equally completed between 1983 and 1987 with an annual capacity of 27,000 tons. However, bumper crops in recent years have raised the rice stockpiling, the volume of which as of the end of June exceeded 800,000 metric tons. [Taipei CNA in English 0258 GMT 20 Jul 81 OW]

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